

5.15 Land Use

5.15.1 Introduction

The land use analysis examines the effects of policy alternatives on the rates of residential shoreline development for selected reservoirs (Table 5.15-02), both mainstem and tributary storage. The selected reservoirs were chosen because their respective rates of residential development may be affected by the alternatives to the existing reservoir operations policy that are being considered in the ROS. Some reservoirs may see a slight acceleration or deceleration of buildout, thereby reaching planned capacity somewhat before or after the currently projected buildout date of 2023. As discussed in Section 4.15 residential development is the predominant land use change occurring in the shoreline (primary) and secondary zones of influence around the reservoirs. Consequently, this analysis concentrates on potential impacts from residential development. Impacts from commercial or industrial development were not included in the land use analysis. Although such developments could occur, they would be site specific and subject to separate environmental review when they are proposed.

Each reservoir is unique, in that the LMP and the SMI govern the available shoreline for residential development (Section 4.15.2). Consequently, the amount of shoreline available for development varies widely among reservoirs, being as little as 8 percent or as much as 88 percent of total shoreline (Table 5.14-02).

Population in the region is expected to continue to grow with urbanization applying pressure to some counties more than others. This anticipated growth would continue to create demand for shoreline residential property. Due to the limited availability of developable shoreline property, all reservoir land where residential access is allowed would eventually be fully developed to its planned capacity.

The factors that affect residential development are both external and internal and differing reservoir levels that result from a change in the TVA reservoir operations policy are only one of several factors of influence to be considered when analyzing rates of shoreline residential development.

5.15.2 Impact Assessment Methods

The land use analysis is based on the following information from the SMI:

- The residential development projection (e.g., 38 percent of total shoreline, or 4,192.2 miles) is the maximum system-wide reservoir shoreline property available for residential development. Actual buildout is expected to be less than 38 percent because of environmental review, maintain and gain exchanges, and the shoreline classification process required by the SMP.
- Sixty-seven percent, or 2,809 miles, of the shoreline property set aside for residential development is undeveloped.

5.15 Land Use

- The pattern for development is defined for a reservoir on an individual basis by its LMP and varies widely between reservoirs.
- The full residential buildout within the primary zone of influence (the 0.25-mile shoreline band) is likely to occur within 25 years, or approximately 2023.
- The SMP requires that environmental impacts due to residential development be mitigated according to applicable regulations. Each proposed development is reviewed independently, and the mitigation requirements imposed are project specific.
- The land use analysis used the same population growth and buildout assumptions concluded in the SMI—full buildout is likely to yield 83,000 new lakefront lots, 91,000 new backlots, and an estimated population increase of 396,000 persons.
- Urbanization was identified as a population growth trend that causes some counties to grow faster than others; therefore, population growth is not evenly distributed throughout the region. Localized areas of faster growth were identified in reservoir counties near Knoxville, Tennessee; Huntsville, Alabama; the Nottely and Chatuge Reservoirs in North Georgia; and the Watts Bar area in East Tennessee.

The descriptions of positive and negative factors that influence the rate of shoreline development came from the Lake Improvement Plan (TVA 1990). Interviews with TVA land management specialists indicate that the factors identified in the Lake Improvement Plan continue to be pertinent to this analysis. For example, growth, infrastructure (transportation and utility) improvements, good-quality commercial recreation and reservoir access, scenic beauty, water quality, and property value are some of the factors that are attractive to prospective buyers. Conversely, remoteness, lack of infrastructure and urban amenities, steepness of the land, lack of commercial recreation, and large reservoir fluctuations were considered detractors for prospective buyers. The land use analysis has examined these factors and additional external factors, such as the general state of the economy, attractive mortgage rates, and real estate marketing efforts in order to understand the relationship to shoreline residential development.

TVA land management specialists have been directly involved in the planning process and the development of the specific LMPs. Having the dual role of process participants and long-term observers, these technical specialists were interviewed to obtain their understanding of the relationship between the factors discussed above and the relative rates of development seen at different reservoirs.

This land use analysis assumed that a correlation exists between the management of reservoir elevations and the duration of reservoir water levels, and the perceived desirability of reservoir shoreline for residential development. The marketing and sales of shoreline property for residential development takes place during the period in summer when reservoir levels are at

their highest. Consequently, altering the duration of the higher elevation during this time would affect real estate marketing efforts.

Table 4.15-02 quantifies the magnitude (in acres and shoreline miles) of open space to be converted to residential use within the primary zone. Potential impacts on the rate of shoreline residential development associated with the alternative reservoir operations policies are expected to be indirect, requiring a qualitative approach. The policy alternatives were compared to the Base Case to evaluate the likely effect of each alternative in causing the rate of shoreline residential development to increase or decrease. For this analysis, an increase in the rate of development means that buildout likely would occur sooner than expected under the Base Case; a decrease in the rate of development means that buildout would occur later than expected under the Base Case.

The impacts of the anticipated changes in the rate of development can be viewed as positive or negative, depending on point of view. An increase in the rate of development can result in a beneficial economic impact or an adverse impact on the natural condition of the reservoir shorelines, and the inverse relationship is also true. The terms adverse and beneficial used to describe the impacts of the alternatives pertain to potential effects on the natural condition surrounding the reservoirs. Via several survey instruments, the SMI (TVA 1998) identified that visual quality and the natural aesthetics of the reservoir shorelines are important to large percentages of residents and recreational users.

The criteria for comparing the alternatives included the metrics cited in Section 4.15.3 and were supplemented where possible by the findings of other study teams, and observations derived from reservoir LMPs, TVA Watershed Management Teams, and others. Indirect effects of shoreline residential development on other resource areas are described in the sections for those resources.

The expected impacts for the Base Case and each of the policy alternatives are discussed in the following sections.

5.15.3 Base Case

The Base Case was established as the reference against which to compare the rates of conversion to residential land use affected by each policy alternative. Assuming no change in reservoir operations policy and practice, the buildout projected by the SMI may be regarded as a reasonable basis on which to expect future land use conversion to residential shoreline development to reach planned capacity.

5.15.4 Reservoir Recreation Alternative A

The improved recreational opportunities and visual quality under Reservoir Recreation Alternative A could result in a slight increase in the rate of conversion of open space. This increase could be slightly adverse to the natural condition of the land surrounding the reservoirs.

5.15 Land Use

5.15.5 Reservoir Recreation Alternative B

The effects on land use under Reservoir Recreation Alternative B would be similar to those described for Reservoir Recreation Alternative A. The slight increase in the rate of conversion of open space to residential property could be slightly adverse to the natural conditions of the land surrounding the reservoirs.

5.15.6 Summer Hydropower Alternative

The effects on land use under the Summer Hydropower Alternative could be slightly beneficial to the natural condition of the land surrounding the reservoirs. A decrease in the rate of conversion of open space to residential property may result from reduced recreational opportunities and visual quality.

5.15.7 Equalized Summer/Winter Flood Risk Alternative

The likely effects on land use under the Equalized Summer/Winter Flood Risk Alternative could be no change or a slight benefit to the natural condition of the land surrounding the reservoirs. A slight decrease in the rate of conversion of open space to residential property may result from reduced recreational opportunities and visual quality.

5.15.8 Commercial Navigation Alternative

No change to the natural condition of the land surrounding the reservoirs is anticipated under the Commercial Navigation Alternative. No change in the rate of conversion of open space to residential property on the affected reservoirs is anticipated, because summer recreation levels would not change from the Base Case.

5.15.9 Tailwater Recreation Alternative

The effects on land use under the Tailwater Recreation Alternative would be similar to those described for Reservoir Recreation Alternative B. A slightly adverse effect on the natural condition of the land surrounding the reservoirs is anticipated for the same reasons.

5.15.10 Tailwater Habitat Alternative

The effects on land use under the Tailwater Habitat Alternative could range from no change to a slightly adverse effect on the natural condition of the land surrounding the reservoirs, similar to those described for Reservoir Recreation Alternative B.

5.15.11 Summary of Impacts

A number of factors influence the rate of shoreline residential development, such as the overall condition of the economy and the attractiveness of mortgage rates. These factors are broad based and would apply to development at all reservoirs. Other factors, such as urbanization,

developed infrastructure and recreation, and reservoir fluctuation are apt to be reservoir specific—with attributes at certain reservoirs more likely to attract development. Those reservoirs are likely to develop faster than other reservoirs. In all cases, all of these factors apply to all of the alternatives being considered to varying degrees.

The land use analysis concluded that the reservoir operations policy can influence the rate of shoreline residential development but is not a determining factor when compared to other factors, such as urbanization and the health of the economy. Table 5.15-01 summarizes anticipated impacts on land use by policy alternative. Shoreline development is expected to occur as projected in the SMI, and none of the alternatives would affect the identified 38-percent total buildout. The land use analysis did find that some alternatives could increase the rate of shoreline development. Both the planning and management processes ensure that the environmental impacts of future development are addressed by the appropriate regulations in place for each proposed project.

Table 5.15-01 Summary of Impacts on Land Use by Policy Alternative

Alternative							
Base Case	Reservoir Recreation A	Reservoir Recreation B	Summer Hydropower	Equalized Summer/Winter Flood Risk	Commercial Navigation	Tailwater Recreation	Tailwater Habitat
Buildout to 38% would occur as projected in the Shoreline Management Initiative (by 2023).	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of conversion of open space to residential property.	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of conversion of open space to residential property.	Slightly beneficial effects on natural conditions would occur because a decrease in the rate of conversion of open space to residential property may result in a slight benefit to the natural condition of land surrounding the reservoirs.	No change to slightly beneficial effects on natural conditions would occur.	No change to natural conditions would occur.	Slightly adverse effects on natural conditions would occur.	No change to slightly adverse effects on natural conditions would occur.